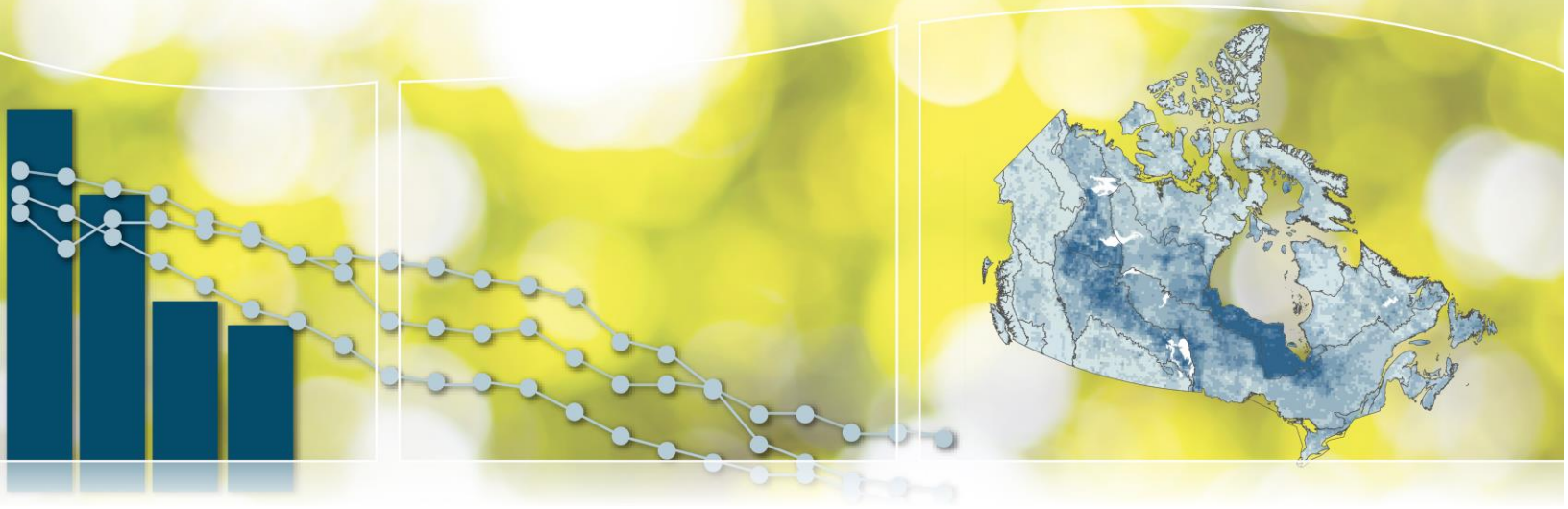
Environment and Climate Change Canada
Environnement et Changement climatique Canada

Canadian Environmental Sustainability Indicators

Household use of chemical pesticides and fertilizers



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Canadian Environmental Sustainability Indicators

Household use of chemical pesticides and fertilizers

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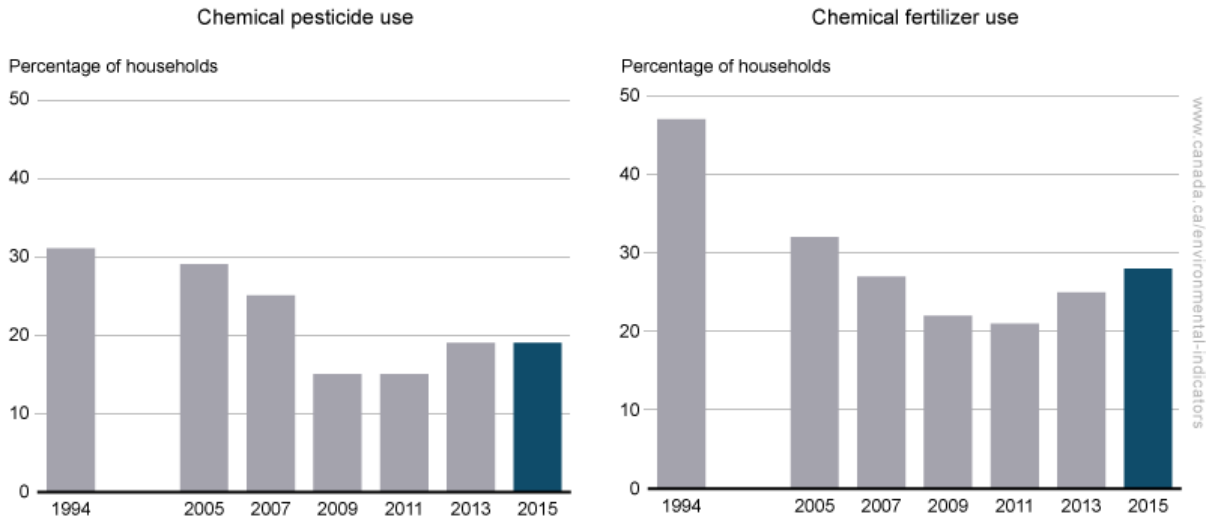
Household use of chemical pesticides and fertilizers indicator

Households use chemical pesticides and fertilizers to improve the look of their lawns and gardens. These chemicals can pollute lakes and rivers that may be drinking water sources for some communities. Chemical pesticides are also toxic to many forms of life and can threaten beneficial species, such as honeybees.

Key results

- Between 1994 and 2015, the percentage of households in Canada that used chemical[1] pesticides and fertilizers on their lawns and gardens decreased.
- In recent years, however, there has been an increase in the percentage of households using pesticides and fertilizers.

Figure 1. Percentage of households in Canada with a lawn or garden using chemical pesticides and fertilizers, selected years



Data for Figure 1

Note: In 1994 and 2005–2006, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2017) 2015 Households and the Environment Survey. Statistics Canada (2015) 2013 Households and the Environment Survey. Statistics Canada (2013) 2011 Households and the Environment Survey. Statistics Canada (2011) 2009 Households and the Environment Survey. Statistics Canada (2009) 2007 Households and the Environment Survey. Statistics Canada (2008) 2005–2006 Households and the Environment Survey. Statistics Canada (1995) 1994 Households and the Environment Survey.

The percentage of households with a lawn or garden using chemical pesticides decreased from 31% in 1994 to 15% in 2011. This percentage then increased to reach 19% in 2015.

Regarding chemical fertilizers, the percentage of households having used them decreased from 47% in 1994 to 21% in 2011, and then increased to reach 28% in 2015.

[1] Chemical pesticides and fertilizers are manufactured. Natural products include the use of nematodes and ladybugs to control pests and manure and compost to fertilize lawns and gardens.

The cosmetic pesticide bans implemented in most provinces and municipalities has likely influenced the reduction since the mid-1990's.[2]

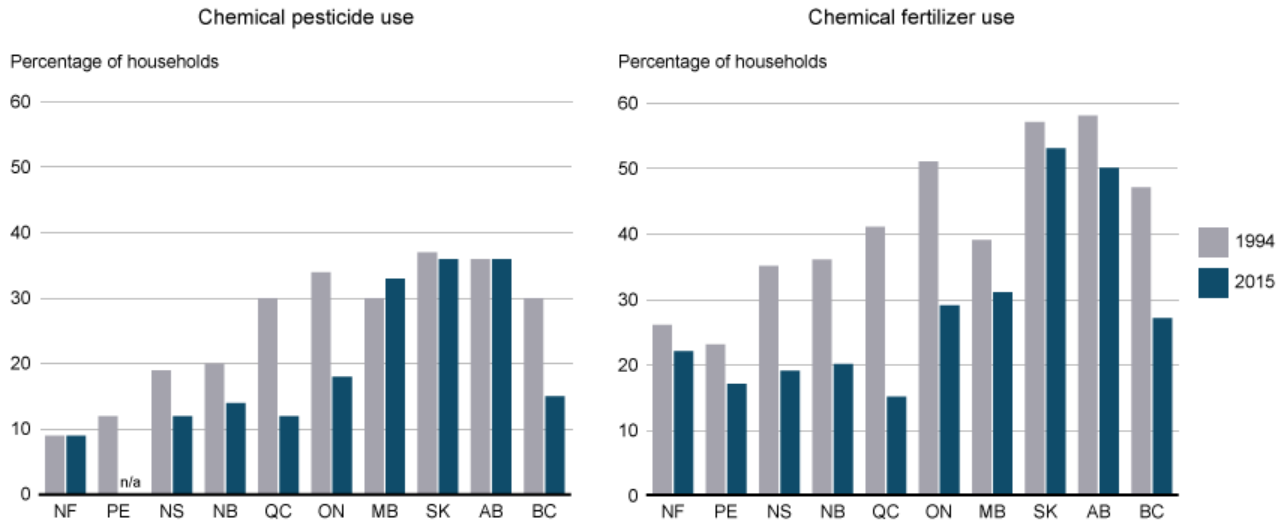
The recent increase could be due to a growth in homes with lawns and gardens, changing lawn and garden care preferences, and new substitute low-risk products that are not covered by pesticide restrictions. Between 1997 and 2015, the number of single-detached homes grew by 71%; between 2011 and 2015, it has grown by 21%.[3]

Household use of chemical pesticides and fertilizers by province

Key results

- The Prairie provinces are the region where a higher percentage of households used pesticides and fertilizers in 2015.
- With the exception of pesticide use in Manitoba, the percentage of households in each province that have used pesticides and fertilizers since 1994 has decreased.

Figure 2. Percentage of households with a lawn or garden using chemical pesticides and fertilizers by province, Canada, 1994 and 2015



Data for Figure 2

Note: n/a = not available due to unreliability of data. In 1994, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2017) 2015 Households and the Environment Survey. Statistics Canada (2015) 2013 Households and the Environment Survey. Statistics Canada (2013) 2011 Households and the Environment Survey. Statistics Canada (2011) 2009 Households and the Environment Survey. Statistics Canada (2009) 2007 Households and the Environment Survey. Statistics Canada (2008) 2005–2006 Households and the Environment Survey. Statistics Canada (1995) 1994 Households and the Environment Survey.

Between 1994 and 2015, the largest drop in the percentage of households with a lawn or garden using chemical pesticides occurred in Quebec, where it decreased from 30% to 12%. In 2015, the

[2] Seven of Canada's provinces currently have cosmetic pesticide bans: Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba. There are also 180 municipalities with cosmetic pesticide bylaws across Canada. Canadian Association of Physicians for the Environment (2016) Cosmetic Pesticides – Provincial Policies & Municipal Bylaws: Lessons Learned & Best Practices (PDF; 1.99 MB). Retrieved on May 19, 2017.

[3] Percentages exclude households located in the Yukon, Northwest Territories and Nunavut. Statistics Canada (2017) Survey of Household Spending. Retrieved on June 15, 2017.

highest users were Alberta and Saskatchewan (36% of households) and Manitoba (33% of households).

The cosmetic pesticide bans in effect in most provinces contributed to the drop in the percentage of households using pesticides between 1994 and 2015. In general, provinces with pesticide bans used less of the products on their lawns and gardens than the national average of 19% of households that had a lawn or garden in 2015:

- 18% in Ontario
- 14% in New Brunswick
- 12% in Nova Scotia and Quebec
- 9% in Newfoundland and Labrador

The largest drop in the percentage of households using fertilizers between 1994 and 2015 occurred in Quebec and Ontario. Quebec households were the lowest users in 2015 with 15% of households using fertilizers. The share of households using fertilizers was the highest in the Prairie provinces, led by Saskatchewan.

About the indicator

What does the indicator measure

The indicator reports the percentage of households that use chemical pesticides or fertilizers on their lawns or gardens in Canada.

Why is this indicator important

Households use chemical pesticides, which include herbicides, insecticides and fungicides, to kill pests and to help improve the look of lawns and gardens. These products can contaminate the air, water, soil and food sources and have negative effects on human and environmental health. For example, insecticides can harm or kill other non-target insects, soil microbes and insect-eating birds, disrupting the natural balance of the lawn or the garden's ecosystem.

Chemical fertilizers contain nitrogen, phosphorus and potassium and are added to lawns and gardens to help them grow greener and thicker. However, if fertilizer is applied improperly or in excess, these nutrients can pollute drainage and storm waters and can eventually reach lakes and rivers. Urban environments often make it easier for these nutrients to run off the land into water bodies because of the many hard surfaces. In addition, water in storm sewers is often not treated before it reaches lakes or rivers and can cause excessive growth of aquatic plants and algae.

What are the related indicators

The Water quality in Canadian rivers indicator provides a measure of the ability of river water across Canada to support plants and animals.

The Nutrients in the St. Lawrence River and Nutrients in Lake Winnipeg indicators report the state of phosphorus and nitrogen levels in those 2 ecosystems.

The Phosphorus levels in the offshore waters of the Great Lakes indicator compares average spring phosphorus concentrations in the 4 Canadian Great Lakes to their water quality objectives to determine the status of phosphorus concentrations in offshore waters in each lake.

The Risk to soil and water quality from agriculture indicator is comprised of Agriculture and Agri-Food Canada's Soil and water quality agri-environmental performance indices which aggregate multiple indicators related to soil and water quality. They are derived from models and formulae that integrate data for soil, climate and landscape with data about crops, land use and land management.

Data sources and methods

What are the data sources

Data for the indicator are from Statistics Canada's Households and the Environment Survey. Data are available from 1994 to 2015.

More information

Data completeness

Canadian households are the target population of the Households and the Environment Survey. However, the survey excludes households:

- located in the Yukon, Northwest Territories and Nunavut
- located on reserves and other Indigenous settlements in the provinces
- consisting entirely of full-time members of the Canadian Armed Forces

Institutions and households in certain remote regions are also excluded.

The 1994 survey was conducted as a supplement to the May 1994 Labour Force Survey. It surveyed 38 080 households and yielded a response rate of 83.1%.

The 2005–2006 survey was conducted as a supplement to the Labour Force Survey from February 15 to April 15, 2006. It surveyed 36 431 households and yielded a response rate of 77.8%.

The surveys for 2007, 2009, 2011, 2013 and 2015 were conducted from October to December of their respective years. Survey samples were selected from respondents (January to June) to Statistics Canada's Canadian Community Health Survey, conducted as follow-up surveys.

The sample size and response rate for the biennial surveys were:

- 29 980 households and 72.3% response rate in 2007
- 20 000 households and 73.8% response rate in 2009
- 20 000 households and 74.3% response rate in 2011
- 31 962 households and 71.8% response rate in 2013
- 21 348 households and 69.9% response rate in 2015

Household estimates are produced using weights associated with each sampled household. The weight indicates the number of households in the sampled unit.[4]

How is this indicator calculated

Data from Statistics Canada's Households and the Environment Survey are used in this indicator. No changes or additional calculations are performed on the data.

More information

Statistics Canada designed the questionnaire for the Households and the Environment Survey in consultation with stakeholders involved in the Canadian Environment Sustainability Indicators program. The questionnaires for each survey year were designed to follow standard practices and wording.

For the 1994 survey, households were asked to respond to the following question:

[4] Statistics Canada (2017) 2015 Households and the Environment Survey. Retrieved on July 5, 2017.

- In the last 12 months, did anyone, including commercial operators, apply the following chemicals to the yard, lawn or garden: pesticides or fertilizers? (Yes, No, Don't know)

For the 2005–2006 survey, households were asked to respond to the following questions:

- In 2005, were any chemical fertilizers applied to your lawn/garden? (Yes, No, Don't know/Refused)
- In 2005, were any weed killers, pesticides, or fungicides applied to your lawn/garden? Include fertilizer and pesticide mixes like "Weed and Feed." (Yes, No, Don't know/Refused)

For both the 2007 and 2009 surveys, households were asked to respond to the following questions:

- In the last 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the last 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? Please include fertilizer and herbicide mixes such as "Weed and Feed". (Yes, No, Don't know/Refused)

For the 2011, 2013 and 2015 surveys, households were asked to respond to the following questions:

- In the past 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the past 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)

What has recently changed

Statistics Canada increased the survey frame for the Households and the Environment Survey. The 2015 survey frame included households that responded to the Canadian Community Health Survey for 1 of the first 3 quarters (January 2015 to September 2015). In past years, households that responded to the first 2 quarters were included. The Households and the Environment Survey is issued as a follow-up survey to the Canadian Community Health Survey.

What are the caveats and limitations

The coverage error for Statistics Canada's Households and the Environment Survey is based on the survey of which it is a sub-sample (the Labour Force Survey in 2006 and the Canadian Community Health Survey from 2007). In all cases, the coverage error is estimated at less than 2%.

In 1994 and 2005–2006, the survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.

The survey also does not distinguish between more or less harmful products. Some cosmetic pesticide regulations, for example, specify permitted use of safe or least-toxic pesticides.

The survey does not include households:

- located in Yukon, Northwest Territories and Nunavut
- located on reserves and other Indigenous settlements
- consisting entirely of full-time members of the Canadian Armed Forces

Institutions and households in certain remote regions are also excluded.

Estimates not meeting an acceptable level of quality were either flagged for caution or suppressed.[5]

Resources

References

Statistics Canada (1995) 1994 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2008) 2005–2006 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2009) 2007 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2011) 2009 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2013) 2011 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2015) 2013 Households and the Environment Survey. Retrieved on April 18, 2017.

Statistics Canada (2017) 2015 Households and the Environment Survey. Retrieved on July 5, 2017.

Statistics Canada (2017) Households and the environment survey, use of fertilizer and pesticides, Canada, provinces and census metropolitan areas: CANSIM Table 153-0064. Retrieved on July 5, 2017.

Related information

How to have a healthy lawn

Canadians and Nature: Fertilizers and Pesticides, 2013

[5] Statistics Canada (2017) 2015 Households and the Environment Survey. Retrieved on July 5, 2017.

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Percentage of households in Canada with a lawn or garden using chemical pesticides and fertilizers, selected years

Year	Percentage of households using chemical pesticides	Percentage of households using chemical fertilizers
1994	31	47
2005	29	32
2007	25	27
2009	15	22
2011	15	21
2013	19	25
2015	19	28

Note: In 1994 and 2005–2006, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2017) 2015 Households and the Environment Survey. Statistics Canada (2015) 2013 Households and the Environment Survey. Statistics Canada (2013) 2011 Households and the Environment Survey. Statistics Canada (2011) 2009 Households and the Environment Survey. Statistics Canada (2009) 2007 Households and the Environment Survey. Statistics Canada (2008) 2005–2006 Households and the Environment Survey. Statistics Canada (1995) 1994 Households and the Environment Survey.

Table A.2. Data for Figure 2. Percentage of households with a lawn or garden using chemical pesticides and fertilizers by province, Canada, 1994 and 2015

Region	Percentage of households using chemical pesticides in 1994	Percentage of households using chemical pesticides in 2015	Percentage of households using chemical fertilizers in 1994	Percentage of households using chemical fertilizers in 2015
Newfoundland and Labrador	9	9[E]	26	22
Prince Edward Island	12	F	23	17[E]
Nova Scotia	19	12[E]	35	19
New Brunswick	20	14[E]	36	20
Quebec	30	12	41	15
Ontario	34	18	51	29

Region	Percentage of households using chemical pesticides in 1994	Percentage of households using chemical pesticides in 2015	Percentage of households using chemical fertilizers in 1994	Percentage of households using chemical fertilizers in 2015
Manitoba	30	33	39	31
Saskatchewan	37	36	57	53
Alberta	36	36	58	50
British Columbia	30	15	47	27

Note: Values marked with an "E" should be used with caution. An "F" is used if the value is too unreliable to be reported. For more information, refer to Statistics Canada's Standard table symbols. In 1994, the Households and the Environment Survey did not make the distinction between natural and chemical fertilizers and pesticides. However, there were not many natural remedies available at that time. The impact on the trend is therefore expected to be minimal.
Source: Statistics Canada (2017) 2015 Households and the Environment Survey. Statistics Canada (2015) 2013 Households and the Environment Survey. Statistics Canada (2013) 2011 Households and the Environment Survey. Statistics Canada (2011) 2009 Households and the Environment Survey. Statistics Canada (2009) 2007 Households and the Environment Survey. Statistics Canada (2008) 2005–2006 Households and the Environment Survey. Statistics Canada (1995) 1994 Households and the Environment Survey.

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